

CLAIMS:

1. A temperature control system for use with a beverage server, the temperature control system comprising:
 - 5 a heater for providing heat to the beverage server;
 - a controller including a microprocessor for controlling the temperature of the beverage in the beverage server;
 - the heater being coupled to the controller; and
 - a temperature sensor and a timer coupled to the controller for use in
 - 10 controlling the temperature of at least one of a beverage retained in the server.
2. The temperature control system as in claim 1 further comprising the heater being an active heating device.
3. The temperature control system as in claim 1 further comprising the server including a housing defining a chamber and a reservoir defining a cavity, the reservoir
- 15 being retained in the chamber of the server housing.
4. The temperature control system of claim 3 further comprising the heater being an active heating device at least partially extending into the chamber of the beverage server.
5. The temperature control system as in claim 4 further comprising the heater
- 20 being an active heating device at least partially extending into the chamber of the beverage server and being positioned external to the reservoir.
6. The temperature control system as in claim 4 further comprising the heater being an active heating device at least partially extending into the chamber of the server housing and at least partially extending into the cavity of the reservoir.
- 25 7. The temperature control system as in claim 1 further comprising the heater being an active heating device positioned external to the server housing.
8. The temperature control system as in claim 1 further comprising the heater being a passive heating device.
9. The temperature control system as in claim 4 further comprising the heater
- 30 being a passive heating device at least partially extending into the chamber of the beverage server.

-28-

10. The temperature control system as in claim 4 further comprising the heater being a passive heating device positioned external to the beverage server.

11. The temperature control system as in claim 1 further comprising programming temperature control information into the controller.

5 12. The temperature control system as in claim 11 further comprising memory coupled with the controller for saving a plurality of temperature control information.

13. The temperature control system as in claim 1 in combination with a beverage maker, the temperature control system being carried on the beverage maker for controlling temperature of liquid dispensed by the beverage maker into the
10 beverage server.

14. The temperature control system as in claim 1 in combination with a remote dispensing station, the temperature control system being carried on the remote dispensing station for controlling the temperature of beverages contained in the server.

15 15. The temperature control system as in claim 1 in combination with a beverage server, the temperature control system being carried on the server for controlling temperature of beverages retained in the server.

16. A method of controlling the temperature of a beverage in a beverage dispenser, the method comprising the steps of:

20 providing a beverage dispenser;

providing a heater associated with a beverage dispenser and coupled to the temperature control system for controllably providing heat to beverage contained in the beverage dispenser;

25 providing a temperature control system coupled to the heater associated with a beverage dispenser for controllably providing heat to beverage contained in the beverage dispenser;

operating the temperature control system to activate and deactivate the heater for controllably providing heat to the beverage retained in the dispenser;

dispensing beverage into the beverage dispenser;

30 controlling at least one of the following temperature characteristics in the temperature control system, preheating a surface of the beverage dispenser which contacts the liquid retained therein, maintaining heating of the heater for a

-29-

predetermined period of time, alternately activating and deactivating the heater over a predetermined period of time.

17. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 16 further comprising the step of:

5 preheating the surface of the beverage dispenser which contacts a beverage disposed in the dispenser prior to dispensing beverage into the dispenser.

18. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 17 further comprising the step of:

continuing to preheat the surface of the beverage dispenser until at least a
10 predetermined temperature is achieved for dispensing beverage into the beverage dispenser.

19. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 18 further comprising the step of:

maintaining the heating of the beverage dispenser for at least a portion of the
15 time during which a beverage is dispensed into the container.

20. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 18 further comprising the steps of:

continuing to heat the beverage dispenser throughout a period of time during
which beverage is dispensed into the dispenser; and
20 deactivating heating of the beverage dispenser after dispensing of beverage into the dispenser had ceased.

21. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 16 further comprising the step of:

defining a dispense period during which a beverage in the dispenser can be
25 dispensed from the dispenser;

calculating a heating time during which heat can be applied to the beverage without significant alteration of the characteristics of the beverage; and

heating the beverage until expiration of the heating time, terminating heating of the beverage after the expiration of the heating time and before the end of the
30 dispense time.

22. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 16 further comprising the steps of:

-30-

calculating a heating time during which the beverage in the dispenser is heated;

activating the heater to heat the beverage for a period proximate to a start of the heating time;

5 deactivating the heating during the heating time;

activating the heater for at least one more time period before expiration of the heating time.

23. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 22 further comprising the step of activating the heater for an
10 initial heating period before initiation of each subsequent heating periods, the initial heating period generally being of a duration which is greater than each duration of the subsequent heating period, deactivating the heater after the initial heating period and prior to activation of the heater in subsequent heating periods.

24. A beverage system for making, retaining, dispensing and controllably
15 heating a beverage produced by and retained in the system, the beverage system comprising:

a beverage maker;

a beverage dispenser operatively associated with a maker for receiving beverage produced by the maker;

20 the beverage dispenser including a reservoir defining a cavity for receiving beverage from the maker and retaining the beverage therein; and

a temperature control system operatively associated with at least a dispenser, a heater of the temperature control system being controllably activated and deactivated to control the temperature of the beverage retained in the dispenser, the temperature
25 control system receiving information relating to the operation of the heater, the information defining heater activation and deactivation.

25. The beverage system of claim 24 further comprising the temperature control system including memory for at least one set of information relating to heater activation and deactivation periods.

30 26. The beverage system of claim 24 further comprising a remote dispensing station, the remote dispensing station being separate from the beverage maker and receiving the dispenser thereon, the remote dispensing station providing at least one

-31-

of power and temperature control to the dispenser for controlling the temperature of the beverage retained in the dispenser while positioned at the remote dispensing station.

27. The beverage system of claim 24 further comprising the dispenser being a thermally insulated beverage server.

28. The beverage system of claim 27 further comprising the heater being carried on the dispenser.

29. The beverage system of claim 28 further comprising the temperature control system being carried on the dispenser.

30. The beverage system of claim 24 further comprising the dispenser being a generally non-insulated server.

31. The beverage system of claim 30 further comprising the heater being positioned on the beverage maker for providing controllable heating of the generally non-insulated server.

32. The beverage system of claim 30 further comprising a remote dispensing station, the heater being positioned at the remote dispensing station for heating the generally non-insulated server, the temperature control system being carried on the remote dispenser station for controllably activating and deactivating the heater.

33. The beverage system of claim 24 further comprising the maker including a water delivery system, an ingredient holder selectively couplable to the maker for retaining a quantity of beverage preparation substance therein, water from the water delivery system being dispensed into the ingredient holder for combining water with the beverage making substance to produce a beverage for dispensing into the beverage dispenser.

34. The beverage system as in claim 24 further comprising an indicator carried on the maker and coupled to the temperature control system, the indicator being activated upon deactivation of the heater.

35. The beverage system as in claim 24 further comprising an indicator carried on a server and coupled to the temperature control system, the indicator being activated upon the deactivation of the heater.

36. The beverage system of claim 25 further comprising a plurality of information relating to heater activation and deactivation at least one set of

-32-

information relating to different temperature levels as well as activation and deactivation periods.

37. The method of controlling temperature of a beverage in a beverage dispenser, the method comprising the steps of:

- 5 providing a beverage dispenser;
- providing a heater in the beverage dispenser and coupled to the temperature control system for controllably providing heat to a beverage contained in the beverage dispenser;
- providing a temperature control system coupled to the heater for controllably
- 10 providing heat to a beverage contained in the beverage dispenser;
- operating the temperature control system to activate and deactivate the heater for controllably providing heat to the beverage retained in the dispenser;
- dispensing beverage into the beverage dispenser;
- heating the surface of the liquid dispenser which contacts a beverage disposed
- 15 in the dispenser prior to dispensing beverage into the beverage dispenser; and
- continuing to provide heat to the beverage dispenser for at least a portion of the period during which beverage is dispensed into the beverage dispenser.

38. The method of controlling the temperature of a liquid in a beverage dispenser as in claim 37 further comprising the step of continuing to preheat the

- 20 surface of the beverage dispenser until at least a predetermined temperature is achieved before dispensing beverage into the beverage dispenser.

39. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 37 further comprising the steps of:

- continuing to heat the beverage dispenser throughout a period of time during
- 25 which beverage is dispensed into the dispenser; and
- deactivating heating of the beverage dispenser after dispensing of beverage into the dispenser has ceased.

40. The method of controlling a beverage in a beverage dispenser as in claim 37 further comprising the steps of:

- 30 defining a dispense period during which beverage in the dispenser can be dispensed from the dispenser;

-33-

calculating a heating time during which heat can be applied to the beverage without significant alteration of the characteristics of the beverage; and controllably heating the beverage until expiration of the heating time, terminating heating of the beverage after the expiration of the heating time and before the end of the dispense time.

41. The method of controlling the temperature of a beverage in a beverage dispenser as in claim 40 further comprising the steps of:

activating the heater during at least two heating periods based by a period of time during which the heater is deactivated.

42. A method of making a beverage and controlling the temperature of a beverage in a beverage dispenser, the method comprising the steps of:

providing a beverage maker;

providing a beverage dispenser for receiving and retaining a beverage from the beverage maker;

providing a heater associated with a beverage dispenser and coupled to the temperature control system for controllably providing heat to beverage contained in the beverage dispenser;

providing a temperature control system coupled to the heater associated with a beverage dispenser for controllably providing heat to beverage contained in the beverage dispenser;

operating the temperature control system to activate and deactivate the heater for controllably providing heat to the beverage retained in the dispenser;

producing a beverage at the beverage maker directly dispensing beverage from the beverage maker into the beverage dispenser;

controlling at least one of the following temperature characteristics in the temperature control system, preheating a surface of the beverage dispenser which contacts the liquid retained therein, maintaining heating of the heater for a predetermined period of time, alternately activating and deactivating the heater over a predetermined period of time.

43. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 42 further comprising the step of:

-34-

preheating the surface of the beverage dispenser which contacts a beverage disposed in the dispenser prior to dispensing beverage into the dispenser.

44. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 43 further comprising the step of:

5 continuing to preheat the surface of the beverage dispenser until at least a predetermined temperature is achieved for dispensing beverage into the beverage dispenser.

45. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 44 further comprising the step of:

10 maintaining the heating of the beverage dispenser for at least a portion of the time during which a beverage is dispensed into the container.

46. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 44 further comprising the steps of:

15 continuing to heat the beverage dispenser throughout a period of time during which beverage is dispensed into the dispenser; and

deactivating heating of the beverage dispenser after dispensing of beverage into the dispenser had ceased.

47. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 42 further comprising the step of:

20 defining a dispense period during which a beverage in the dispenser can be dispensed from the dispenser;

calculating a heating time during which heat can be applied to the beverage without significant alteration of the characteristics of the beverage; and

25 heating the beverage until expiration of the heating time, terminating heating of the beverage after the expiration of the heating time and before the end of the dispense time.

48. The method of making a beverage and controlling the temperature of a beverage in a beverage dispenser as in claim 16 further comprising the steps of:

30 calculating a heating time during which the beverage in the dispenser is heated;

activating the heater to heat the beverage for a period proximate to a start of the heating time;

-35-

deactivating the heating during the heating time;

activating the heater for at least one more time period before expiration of the heating time.

49. The method of making a beverage and controlling the temperature of a
5 beverage in a beverage dispenser as in claim 48 further comprising the step of
activating the heater for an initial heating period before initiation of each subsequent
heating periods, the initial heating period generally being of a duration which is
greater than each duration of the subsequent heating period, deactivating the heater
after the initial heating period and prior to activation of the heater in subsequent
10 heating periods.